

## ABSTRACT OF THE DISCLOSURE

The present invention relates to the traveling-wave amplifier having a  $\pi$ -type output transmission line structure.

5 In traveling-wave amplifiers having conventional output line structures including T-line and m-derived-line structures, additional capacitance and inductance are attached to the output of the transistors for velocity matching in input/output transmission lines in order to improve gain-bandwidth product. However, it is difficult to achieve  
10 velocity matching of output/input transmission lines without stability problem due to the influence of the additional capacitance and inductance through the feedback capacitance of the transistor used.

15 The present invention provides the traveling-wave amplifier having a  $\pi$ -type output transmission line structure, where the additional capacitance used for velocity matching of input/output transmission lines is connected in the middle of the output line. Since the additional element is isolated from the output of the transistor by the output transmission line, the  $\pi$ -type output transmission line structure can achieve velocity matching of output/input transmission  
20 lines without stability problem associated with the additional capacitance and the feedback capacitance of the transistor. The traveling-wave amplifier having a  $\pi$ -type output transmission line structure has an improved bandwidth, gain flatness, and stability compared to traveling-wave amplifiers having the conventional output  
25 line structures.